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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/929,040	YOSHIDA ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 10 is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 August 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. JP2000-371494, filed on 12-1-2000.

Drawings

The drawings were received on 8-15-01 and have been reviewed by the draftsperson and examiner.

Figures 2-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-4, 7 and 9 rejected under 35 U.S.C. 102(e) as being Mikkonen US 6,587,457 (hereafter Mikkonen).

As per **claim 1**, Mikkonen teaches a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") connected between a plurality of BTS's for conducting communications with a plurality of mobiles via radio channels and a communications network (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown

as MT), for transferring packets received from said communications network to a BTS accommodating a destination mobile of the received packets (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Storing means for storing packets received from said communication network correlating the packets with the destination mobile station (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),;

Receiving means for receiving a control message from each BTS, the control message being generated according to a rate of packet transmission between the BTS and one of mobile stations under control of the BTS (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

Control means for reading out packets destined for a specific mobile station from said storing means in accordance with the contents of the control message received by said receiving means and transmitting the packet to the BTS to which the specific mobile station is connected (figure 3 shows a Flow Manager, #302 and QoS manager #306 which inherently provide traffic flows based on requested QoS and the loading of the communication links in real-time which reads on the claim. The examiner also notes that figure 5 shows allocation of radio resources #506, allocation of "wired" resources #507 and flows being mapped #509).

As per **claim 3**, Mikkonen teaches claim 1 wherein said receiving means comprises:

A transmission and reception control unit connected to the BTS (figure 2 shows APC/Mobile router with wired transceiver to communicate with AP1/BTS)

A BTS session management unit for extracting transfer rate information of each mobile from said control message received by said receiving means (figure 3 shows background processes that run on the APC/Mobile router including a Wireless Admission control #304, Flow Manager #302, Management Agent (not numbered), QoS manager #306 and Flow Policer, #301. Figure 5 depicts how the processes perform routing of data packets based on extracted control/setup information).

As per **claim 4**, Mikkonen teaches claim 1 wherein said control means has a BTS session management unit for reading out packets destined for a specific mobile indicated by said control message from said storing means and transmitting the packets to the BTS to which the specific mobile is connected at a transfer rate designated by said control message (figure 5 shows control messages setting up/allocating a link between mobile and APC/Router and C8, L5 to C9, L29 and C10, L41 to C12, L3 all which teach setting up a link between the APC/router and BTS/Mobile along with requested QoS supported requested service level).

As per **claim 7**, Mikkonen teaches a wireless communication system (figure 2) comprising a plurality of BTS's for performing communications with a plurality of mobile stations in their control areas via radio channels (figure 2, BTS shown as AP1, AP2, #4, #4') and a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") and a connection between said plurality of BTS's and a communications network (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Wherein each of said BTS's has means for receiving a notification of a transmission rate, which is calculated on the basis of a signal received from the BTS,

from each mobile in the control area, and means for generating a control message for designating a packet transfer rate for each mobile and transmitting the control message to said PTA (figure 3 shows flow manager #302 and Qos Manager #306 and figure 5 shows setup/control for link(s) between mobile, BTS and APC/PTA. Also see C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

Said PTA has means for storing packets received from said communication network for each destination mobile and selectively transfers the packet to each of said BTS's at a packet transfer rate peculiar to the destination mobile designated by said control message (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64).

As per **claim 9**, Mikkonen teaches a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") connected between a plurality of BTS's for performing communications with a plurality of mobiles via radio channels and a communications network (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT), for transferring packets received from said communications network to a BTS accommodating a destination mobile of the received packets (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Means for grouping a plurality of mobiles under control of BTS's in accordance with transmission rates of the radio channels for each BTS (C8, L62 to C9, L9 teaches

grouping wireless flows (eg. from users) which reads on grouping like users together to gain link efficiencies).

Storing means for storing packets received from said communication network correlating the packets with the destination mobile station (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),;

Receiving means for receiving a control message from each BTS, the control message being generated according to a rate of packet transmission between the BTS and one of mobile stations under control of the BTS (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

Control means for reading out packets destined for a specific mobile station from said storing means in accordance with the contents of the control message received by said receiving means and transmitting the packet to the BTS to which the specific mobile station is connected (figure 3 shows a Flow Manager, #302 and QoS manager #306 which inherently provide traffic flows based on requested QoS and the loading of the communication links in real-time which reads on the claim. The examiner also notes that figure 5 shows allocation of radio resources #506, allocation of "wired" resources #507 and flows being mapped #509).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen.

As per **claim 2**, Mikkonen teaches claim 1 **but is silent on** wherein said storing means stores packets received from said communication network correlating the packets with a group of mobile stations.

The examiner notes that Mikkonen teaches the use of the TCP/IP protocol which supports Unicasting (1-to-1) and Multicasting (1-to-many) where multicasting reads on the claim. The purpose of Multicasting is to allow one server to transmit one data stream which is received by multiple end-users, thereby conserving bandwidth.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that stored packets can be correlated to a (multicast) group of users, to conserve bandwidth when sending the same data to multiple end-users.

Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen and further in view of Maxemchuk US 6,411,810 (hereafter Maxemchuk).

As per **claim 5**, Mikkonen teaches a packet transfer apparatus (eg. mobile IP Router, figure 2, APC1-3, #5, #5', #5") connected between a plurality of BTS's for conducting communications with a plurality of mobiles via radio channels and a communications network (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT), for selectively transferring packets received from said communications network to a BTS accommodating a destination mobile of the received packets (data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-

67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

Storing means for storing packets received from said communication network correlating the packets with the destination mobile station (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64),;

Receiving means for receiving a control message from each BTS, the control message being generated according to a rate of packet transmission between the BTS and one of mobile stations under control of the BTS (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514), **But is silent on** Control means for calculating a total value of packet transfer rates of a plurality of mobile station under control for each BTS from the control message received by said receiving means, when the total value of the packet transfer rates exceeds an upper limit value of the rate of data transfers between the packet transfer apparatus and the BTS, decreasing the packet transfer rates of said plurality of mobiles at a predetermined ratio, reading out packets destined for said mobiles from said storing means in accordance with the decreased packet transfer rates, and transmitting the packets to the BTS to which the mobile stations are connected.

The examiner notes that Mikkonen does teach flow control and QoS which reads on control means to decrease data transfers but puts forth **Maxemchuk** who teaches a cellular arrangement whereby the BTS can detect overload conditions and lower (and/or raise) the data rate of the mobile (title, abstract and C1, L65 to C2, L28). One skilled can adapt/integrate this feature with Mikkonen's flow control and QoS operations.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that control means calculates packet transfer rates and decreases rates if/when high loading occurs, to provide means for supporting all/many mobile users by decreasing their transmit rates as bandwidth diminishes via QoS.

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen and further in view of Kim et al. US 6,510,145 (hereafter Kim).

As per **claim 6**, Mikkonen teaches a base station for conducting communication with a plurality mobile stations via radio channels and a communications network (BTS shown as AP1/AP2, #4, #4' and mobile terminal shown as MT and data flows are from mobile terminal/radio network [#2] to/from Core Network/Internet [#3] and C5, L45-67 and figure 4a shows mobile connecting to APC/Mobile Router via AP/BTS), comprising:

A receiving unit for receiving information which designates forward link transmission rate from each of mobiles under control **AND** a transmitter for reading out the packets stored in said buffer memory in accordance with the forward link transmission rate designated by the destination mobile thereof, and transmitting the packets to a radio channel corresponding to the destination mobile. (C8, L48 to C9, L29 and C10, L41 to C12, L3 and figure 5 – Mikkonen focuses on data from the wired network sent to the wireless mobile unit but the examiner notes that the same operation(s) will hold for the reverse (eg. Mobile to wired network). Hence, one skilled realizes that the APC/mobile IP router must communicate with the AP/BTS in order for it to understand the quality of service the combined mobile terminal/BTS link can support. This inherently requires control messages as are shown in Figure 5, see all steps above the bottom line, #514).

A controller for generating a flow control message for designating a rate of packet transfer from said packet transfer apparatus (PTA) to the BTS in accordance with the forward link transmission rate designated by each mobile and transmitting the generated message to said PTA (figure 3 shows a Flow Manager, #302 and QoS manager #306 which inherently provide traffic flows based on requested QoS and the

loading of the communication links in real-time which reads on the claim. The examiner also notes that figure 5 shows allocation of radio resources #506, allocation of "wired" resources #507 and flows being mapped #509);

A buffer memory for storing packets destined for said mobiles, which are received from said PTA (routers inherently contain memory since they often connect LAN's to WAN's and/or disparate networks which requires buffering/memory – refer to Cisco router specs at www.cisco.com - and TCP/IP requires Source/Destination addresses (figure 1 and C1, L45-54) whereby the router will route packets based on Source/Destination addresses, C5, L57-64); and

But is silent on the base station constructing a wireless communication system together with a packet transfer apparatus (PTA).

The examiner notes that one skilled would provide for the PTA to either be integrated into the BTS or an outboard piece of hardware - the PTA would be outboard for an already existing BTS but can be bought as one integrated system for future installations. Further to this point is **Kim** who teaches an apparatus for providing a forward packet data service of a base station in a CDMA communication system, comprising: a packet control channel transmitter for transmitting a packet control message; a forward packet traffic channel transmitter for transmitting a packet data to a designated terminal in an assigned slot period; and a base station packet controller for generating the packet control message when generating the packet data to be transmitted in a packet idle state, said packet control message including information for assigning the slot period of the forward packet traffic channel and the terminal to be assigned the forward packet traffic channel, assigning the forward packet traffic channel in the assigned slot period, releasing the assigned forward packet traffic channel after transmitting the packet data and transitioning to the packet idle state (see claim 10).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that the BTS is constructed with a PTA, to provide a BTS which functions as one unit so that data links are not required between the BTS and packet control function which speeds processing (eg. local bus connection vs. wired link).

Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen and further in view of Demetrescu et al. US 6,647,262 (hereafter Demetrescu).

As per **claim 8**, Mikkonen teaches claim 7 **but is silent on** wherein each of said BTS has means for:

Transmitting a notification message to said PTA apparatus when handover of a mobile occurs from one of neighboring BTS's to the BTS, the message indicating that said mobile has moved in the control area of the BTS;

Said PTA has means for interrupting transfer of a packet destined for said mobile to said neighboring BTS in response to said notification message and starting transfer of the packet for said mobile station to the BTS to which said mobile station is handed over when a control message for designating a packet transfer rate from BTS.

Demetrescu teaches/discloses that handover notification messages are transmitted from cellular network components (figures 3-5, see handover message flows) and ETSI standards for General Packet Radio Service (GPRS) or Enhanced General Packet Radio Service (EGPRS) Real Time (RT) service during handover are not maintained - thus, during the cell handover period, data flow is stopped completely before handover takes place and is only recommenced after handover has been completed. The examiner interprets that the handover messages perform two operations: 1) informs BTS/PTA that a mobile is to be handed over to their control and 2) stops data flow while handing over (C1, L20-31).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Mikkonen, such that a handover notification is sent and data transmission is stopped, to provide means for the system to understand it will need to support a new roaming user, information about what/how said user is transmitting and stopping the data flow until the handover completes.

Allowable Subject Matter

Claim 10 allowed. Claim 10 recites a highly specialized design whereby the examiner believes the novelty to be focused on:

A **BTS** comprising:
- A buffer memory divided into a plurality of rate class areas
- Means for generating a control message for instructing a transfer amount of packets from said PTA to the BTS at each rate class in accordance with a free space in each rate class area
- Means for storing a packet received from the PTA into a rate class area
- Means for reading out packets at a rate corresponding to a rate class from each rate class area in said buffer memory; and

A **PTA** comprising:
- means for grouping packets received from the communication network into rate classes according to data transmission rates of destination mobiles and buffering of packets,
- means for reading out packets in accordance with a transfer amount of each rate class indicated by the control message.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

1. Gardner et al. US 5,857,147
2. Seo US 6,463,044
3. Cudak et al. US 6,253,063
4. O'Carroll US 6,714,794
5. Pankaj US 6,324,172

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen D'Agosta